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☞See advertisement on last page.

Poetry.

THE LILLY OF THE VALLEY.

BY MAJOR CALDER CAMPBELL.

They sin who say this earth
Is one wide scene of crime and woe;
This world, which owes to God its birth,
At times is dark—Man makes it so;
But yet the sunshines on it rests
On happy homes and truthful breasts.

God made the world, but made not sin,
Nor may we ask why sin e'er came
To fill its green retreats with din:—
Enough to know that death and shame
Are with us—but the world hath yet
Bright jewels in its forehead set!

A blessed thing the golden sun,
That kisses morning's dews away;
A blessed thing those dews, that run
O'er leaf and bud, at close of day,
To give them bloom and bid them be
Fair gems in Nature's treasury!

A blessed thing the bird that basks
In bowers, with songs to heaven that soar;
A blessed thing the sea, that asks,
And has obedience, 'mid the roar
Of tempests, from the tideful moon,
Next to the sun, God's brightest boon!

A blessed thing the mountain steep,
Nor less the green wood o'er it spread;
A blessed thing the river deep,
By fresh mysterious sources fed;
And blessed things the light, the air,
The life-breath—moving every where!

A blessed thing the meanest flower
That sends forth blossoms for the the bee;
And oh! of all that decks the bower,
The field, the forest or the lea,
Most lovely in its tender bliss
The Lilly of the Valley is!

There—like a virgin sweet and pure,
And gay, but for her humble pride,
That fain would every charm immure,
Yet cannot all her sweetness hide—
The Lily of the Valley rests
Where wood birds build their mossy nests.

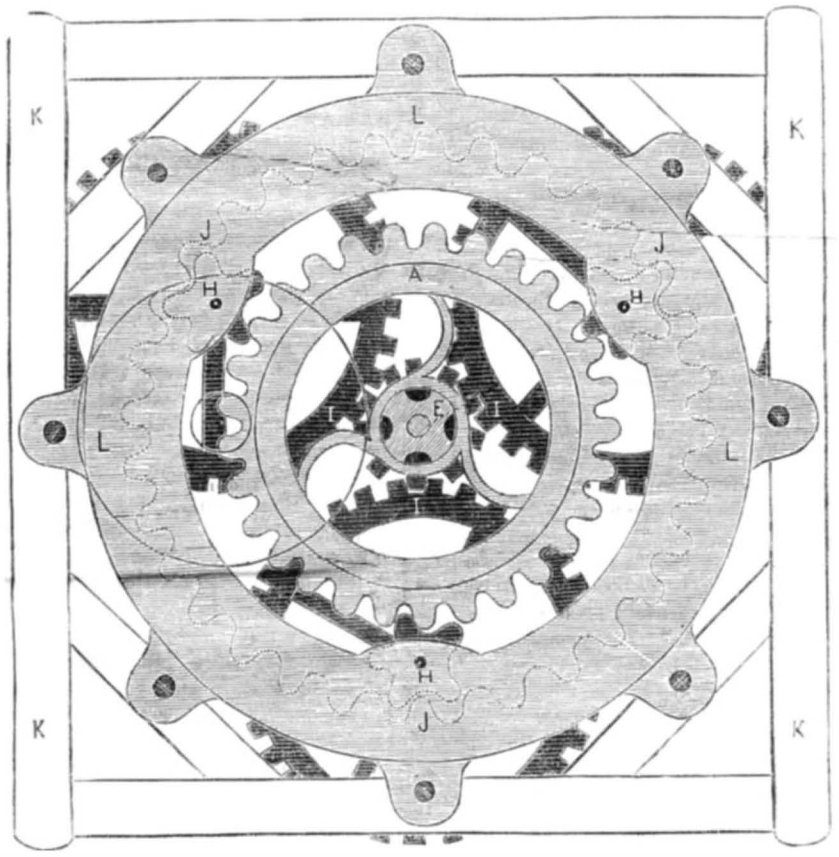
The emerald hath no deeper green
Than glistens on its beauteous leaves;
No whiter snow is ever seen
Than that which in its blossom weaves;
Nor breathe the spicy gums of Ind
A sweeter fragrance on the wind!

I love it well!—I love it aye,
But now I love it more and more:
It brings the image of a day
Whose shadow, flitting memory o'er,
Shall in the future smile, till all
Around me seem a festival!

A Play upon Words.

A bat about a farmer's room
Not long ago I knew
To *fly*. He caught a *fly*, and then
Flew up the chimney *flue*.
But such a *scene* was never *seen*,
(I am quite sure of that,)
As when with sticks all hands essayed
To hit the *bat* a *bat*.

ANTHONY'S PATENT HORSE POWER.



The above engraving represents a view of Mr. David Anthony's "Horse Power" secured by patent on the 7th day of August, 1847, and which is a good accompaniment to his Thresher, represented and described on another page. In describing this machine by a top view, our task is no easy one.—To render it plain and easily to be comprehended we will do our endeavours, nevertheless our readers will have to pay particular attention and use some reflection, to understand it; but this kind of study is never lost—it is rewarded with an increase of power to read mechanical movements—a science or itself.

A, is the principal driving wheel. It has a hub, (which cannot be recognised, but which projects upwards and receives the bars or horse levers to drive the machine.) This is keyed upon the top of a spindle, which passes downward through the eye of the concentric pinion E, without being connected therewith, as the said pinion is keyed upon a sleeve. (At the outset, we would say, that the circular lines A E, represent wheels, but are shown as circles to prevent confusion in the drawing.) The wheel A, drives the pinions H H H, upon the shafts of the wheels I I I. These pinions run between the periphery of the driving wheel and the interior segment J J J, (represented by dotted lines,) which is firmly bolted to the frame K K K K. The shafts which bear the pinions H H H, and the wheels I I I, are embraced between two annular flanges L L L, in the same manner as the wheels of a pocket watch are contained between the upper and lower plates. These flanges are at liberty to revolve, the upper one made to revolve upon friction wheels and they together with the wheels I, and the pinions H, upon the same shafts form a system which by the action of the driving wheel revolves about the axis of the latter as a centre—the wheels and pinions not only turning upon their own axis, but revolving in an orbit and carrying round the flanges. The wheels I, revolve about and all work into the pinion E, keyed upon a sleeve and which encloses the spindle of the driving wheel. Upon the lower end of this sleeve is a wheel which drives a pinion for a band wheel to connect with other machines such as driving the Thresher. This arrangement is represented by the circles seen on the left.

The advantages claimed for this horse power and system of gearing are, first, the main vertical shaft, being supported by the wheels I I I, to remove friction from the bearing. 2. As the teeth of the pinions H H H, are engaged upon opposite sides, there is no pressure upon the upper bearing of the shafts. 3. As the wheels roll about one another, the friciion is rolling, and therefore does not expend so much power as if by rubbing. 4. As the pinions H H H advance in their orbits and revolve upon their axis at the same time, they accomplish their revolutions in a shorter time than under other conditions—and thus the speed can be got up faster. The horse levers, which are not represented in this engraving, are so arranged that each horse must do his portion of the work, and sudden jerks are thereby prevented. Twenty of these machines with their Threshers are in successful and satisfactory operation. More information regarding price, &c. may be had by letter, post paid, addressed to the patentee, whose direction is given in our description of the Thresher, on page 396.

Southern Turpentine.

Two large vessels are now loading with turpentine at Wilmington, North Carolina, for direct voyages to London. The "Commercial Review" speaks of this as an unusual circumstance, and urges an increase of the facilities of trade with the back country, to continue and encourage such a promising line of business.

The length of the Potomac bridge at Washington is 5300 feet. The longest known except the succession of wooden bridges at Nantes, which contend collectively 9600 feet.

An Illinois paper states that some lover of ornithology has made from the prairies of that state alone a collection of 400 different varieties of birds.

RAIL ROAD NEWS.

Worcester and Nashua Railroad.

The Lancaster, Mass. Courant, says that the freight and passenger Depots in Clintonville are now nearly completed, and will soon be ready for service. So far, the road has been doing a good business. The rails are being laid between Clintonville and Worcester with all possible rapidity, and the day is very near at hand when we shall be able to announce its completion.

Hartford and Springfield Railrord.

The receipts of the Hartford, New Haven and Springfield Railroad for July were upwards of $36,000, a larger sum than was ever received for any previous month's business. The business of the last month is said to exceed this amount even.

Auburn and Syracuse Railroad.

The Auburn and Syracuse Railroad company, N. Y. have declared a stock dividend of fifty per cent. on all the stock which shall be standing on their books on the 1st of October next. This is an addition to their regular semi-annual dividend of four per cent.

Jeffersonville and Columbus Railroad.

The directors of this road in the State of Kentucky, after long consultation, located it for thirty-five miles, adopting the route up Silver Creek, instead of the route by Charlestown. The route via Charlestown was 2½ miles longer, the elevation 61 feet greater, and the cost $48,000 more. The whole route to Columbus on the Silver Creek location is but two miles longer than the air line, and no curve has a less radius than 5,000 feet. The engineer was directed to locate and estimate thirty-five miles, preparatory to making construction.

Paterson and Ramapo, N. J. Railroad.

The Paterson and Ramapo Railroad is nearly completed, and it is expected that it will be in running order early in this month. This road is fifteen miles in length, and connects the Erie and Paterson roads, making the route to Jersey City 31 miles, from Ramapo. It is estimated that by this route passengers can reach the city an hour sooner than by the river. The cars designed for this road were made at Springfield, and the Engines at Paterson.

The Pennsylvania Central Rail Road.

We learn from the Pittsburg Gazette, that the subscription of 20,000 shares to the stock of this Company has been finally consummated by the Commissioners of Allegheny county. In making the subscription, it is stipulated that "this subscription, together with the additional sum of one million of dollars, shall be expended in the construction of the road from Pittsburg easterly to Alleghany Mountains." Other conditions, which were also accepted, require that the terminus of the road shall be within the city of Pittsburgh; and that the Rail Road Company shall pay 6 per cent. interest on the subscription until the road is finished.

Schuylkill Coal Trade.

The facilities for sending coal to market from this region are on the most ample scale. Both the canal and rail road are among the best in the world, and capable of carrying almost any amount that may be required. During the week ending the 10th inst. the quantity forwarded from this region was, by rail road, 34,593 17 tons and by canal 16,346 02 tons—together 50,939 19 tons; being considerably the largest quantity ever forwarded in any previous week.

During the week ending on Thursday last the supplies have been, by canal, 13,725 11 tons and by railway 30,044 08 tons; total 43,769 19 tons.—*Pottsville Emporium.*

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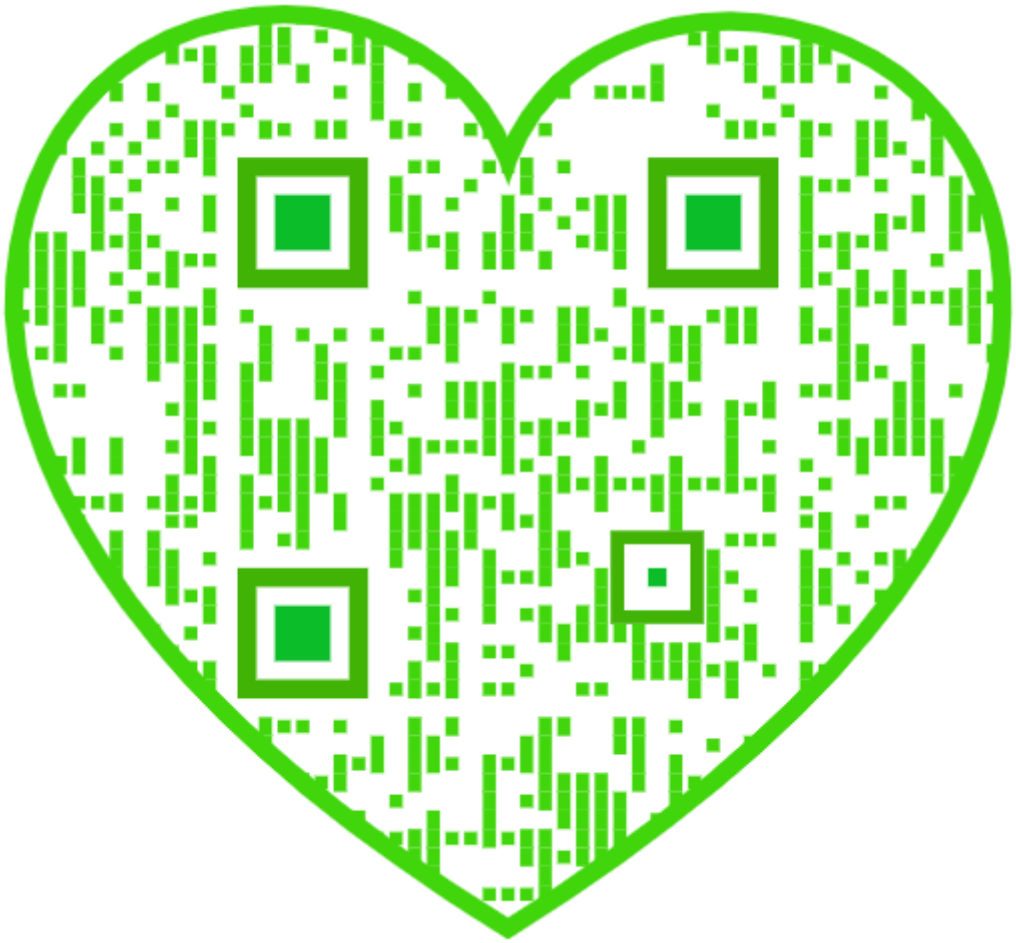

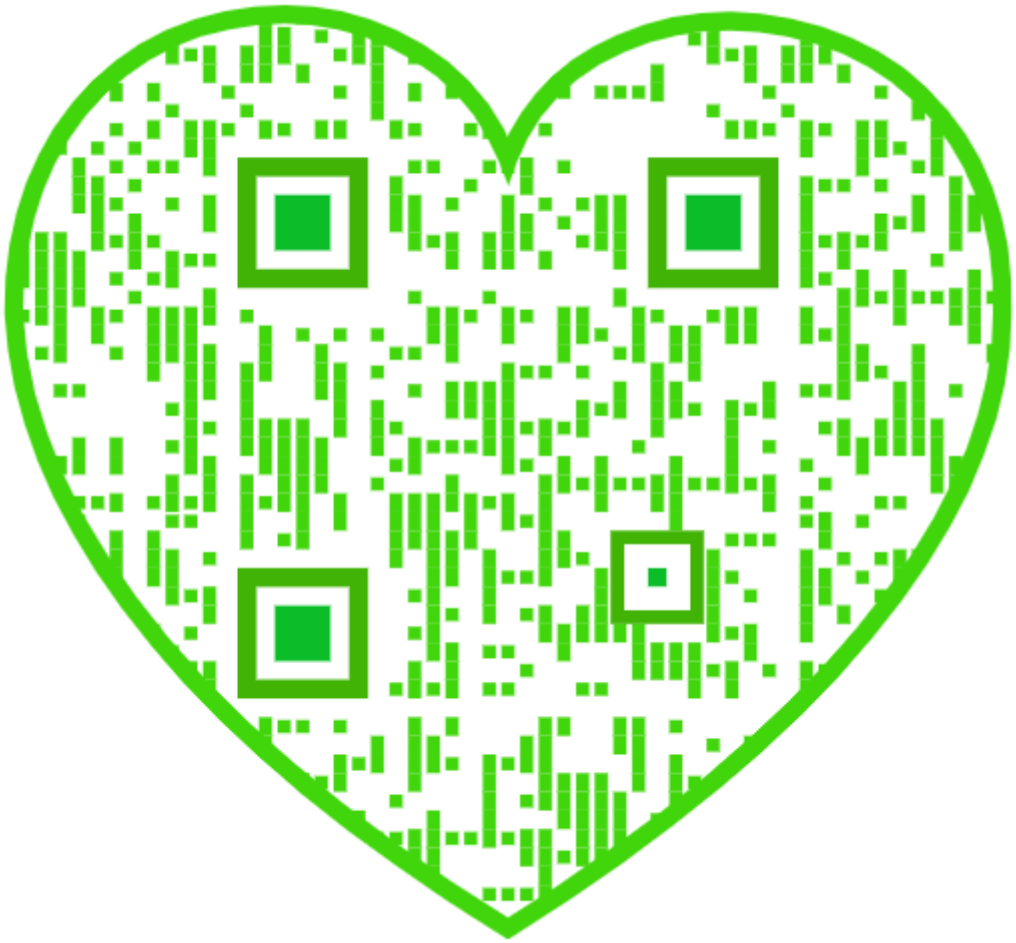

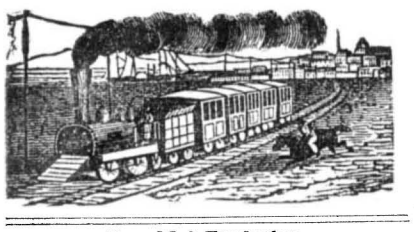

Dreadful Explosion.

The shocking accident which occurred two weeks since by the collapsing of the flues of the steamboat E. Bates, on the Illinois river, was caused no doubt like all others, by the want of water. The flues exploded at both ends of the boiler at the same time, dealing terrible destruction, fore and aft, among the deck passengers and crew; the force of the steam carrying overboard all in its range, and scalding, more or less, nearly every one on the lower deck. At the time of the accident the first pilot and first engineer, both considered competent men, were on duty and the captain had just retired to his birth. The boat had been running slowly in shoal water for two or three miles, and it is probable that from some cause the water had got too low in the larboard boiler, and caused it to explode the flues. The boilers were new and constructed of the best of iron, and when examined no flaws or blemishes could be discovered. Yet for all this there can be no doubt of a manifest recklessness. Why is it, that on the Western rivers, where the high pressure non-condensing engines are used, explosions are the most frequent? Not a single instance has ever come to our knowledge of an explosion where there was plenty of water in the boiler and a moderate pressure on the safety valve.

By the St. Louis Reveille, we learn that a committee of practical engineers, belonging to the St. Louis association, have made an examination into the causes which produced the recent melancholy explosion on board the steamer Edward Bates, and they report that the explosion was the result of the engineer's neglect or recklessness. From evidence gathered in their inquiry they established the fact, that, at the time of the explosion, the engineer had over 200 pounds weight per square inch upon the safety-valve, and that the supply-pumps to the boilers were stopped, thus making an explosion inevitable. From 120 to 130 pounds is the extent of weight which should safely be carried upon the safety valve with the supply-pump in operation.

In view of the facts thus established, the committee recommend that James Donaho, the engineer of the Edward Bates be expelled from the St. Louis Association of Practical Engineers.

A New England Manufacturing Village.

The Agawam Canal Company are about to establish a factory village in West Springfield, Mass., on the following principles. 1. The directors and agents are to be decidedly religious men. 2. No individual to be employed in the establishment who uses profane language, or intoxicating liquors, or violates the Sabbath, or is known to be in any respect immoral. 3 A place of worship to be provided, and a minister to be established from the outset. The boarding houses to be kept by religious families and the utmost care exercised in regard to the morals of the operatives.

The Prairie Car.

The St. Louis Republican says Gen. Semple's Car seems to operate to the satisfaction of the Illinois public. It has run regularly at the rate of four or five miles an hour, carrying fifty passengers, and for several hours has run ten miles an hour. It is proposed to raise ten or twelve thousand dollars to put a daily train in operation between Springfield and Alton.

[Thus we see that the invention of Stevinius is revived in the nineteenth century in a land five thousand miles from the low countries of Germany, and separated by a lapse of 200 years from the time of that famous Dutch Engineer.—Ed.

It is stated that the President of the Wesleyan Methodist conference in England is henceforth to be distinguished by the high-sounding ecclesiastical title of "The Very Reverend the President!"

Natural Phenomenon.

Great excitement has of late prevailed at Liegnitz in Germany, caused by another mysterious locomotion of the Wanderstein, or migrating stone of Riesengebridge. This stone has repeatedly been known to have changed its place, without the action of any outward agency whatever. It stands in the Agnetendell, near the village of that name, and consists of fine grained granite of yellowish grey, composed of white quartz, red feldspar, with a slight admixture of black glimmer. This block of stone has suddenly moved above twenty-five yards from its former place. The last locomotion dates from the year 1822, and its migrations are the more enigmatical, as they take place, not on a slope, but on perfect level ground. It is impossible to conceive the cause which thus repeatedly forces this rock from its place of rest, and constrains it to such violent leaps as that in 1822 and of this year, which took place between the 18th and 20th ultimo.

Population of Canada.

We understand that the result of the census, just completed, of Upper Canada, will give that section of the province a population of from 689,000 to 700,000 souls; while, by the census of 1842-3, it was only 401,061, giving an increase, in five years, of nearly 200,000. The last census for Lower Canada was taken in 1844, when the population was 699,806 souls, the increase upon which during the last four years, is calculated, by reference to preceding terms at which censuses have been taken, to be about 70,000, giving this section of the province a present population of about 770,000. The population of Upper Canada would thus appear to increase at the rate of about 40,000 per annum, and Lower Canada at that of about 17,000 per annum. Supposing these relative rates of increase to be maintained, the year 1852 will see Upper Canada with a population of 859,000, and Lower Canada with only 840,000. 1862 will give the former a population of 1,259,000, and the latter only 1,015,000 souls

A Singular Case.

Dr. Dougherty relates the following singular case in the New Jersey Medical Reporter—Miss F, aged 22, asked advice relative to constant headache and palpitation. On examining the chest stethoscopically, what was my surprise to meet with the heart beating on the right side, exactly corresponding with its normal place on the left. She stated that she had never received any injury, nor been the subject of any inflammation of the chest. Percussion gave a clear sound over the heart's normal location,—while, by the dullness, it clearly defined the organ in its new quarters. In view of the frequent concomitance of malposition of other viscera, I explored the hypocondra, and detected the liver, on the left side instead of the right.

Price of Gas.

The price of gas has been reduced in Philadelphia to $2,25 per 1000 cubic feet Here we pay $4 to one company and $7 to another for the same amount. We New Yorkers are singularly blessed in good prices, and after such amount of gas tax we can afford to walk through Coventry with our beavers stuck upon three capillary appendages and not a dog dare say boo.

The Astor House in this city makes its own gas and saves about $20 per week—paying all expenses. The gas made in our city is sometimes abominable stuff—not half purified. This is poor economy, for the more pure the gas, the longer the pipes last, and there is far less trouble in keeping them clean. It is a miserable policy to make poor gas.

A Great Comet Expected.

The attention of astronomers in Europe has recently been turned towards the subject of a great comet, which appears to have visited our system at intervals of 292 years, and if the calculations of many scientific men be correct, ought to make its next appearance during the present year, not far from the month of August or September. Mr. J. R Hind an astronomer of London, has lately published a work on this subject, and confidently predicts the return of the celestial visitant in 1848.

An Odd Calculation.

What a noisy creature would man be were his voice in proportion to his weight, as loud as that of a locust? A locust can be heard a the distance of 1-16 of a mile. The golden wren is said to weigh but half an ounce; so that a middling sized man would weigh down not short of 4,000 of them; and it must be strange if a golden wren would not outweigh four locusts. Supposing, therefore, that a common man weighs as much as 19,000 of our locusts, and that the note of a locust can be heard 1-16 of a mile, a man of common dimensions, pretty sound in wind and limb, ought to make himself heard at the distance of 1,600 miles; and when he sneezed "his house ought to fall about his ears." Supposing a flea to weigh one grain, which is more than its actual weight, and to jump one and a half yards, a common man of 150 pounds, with jumping powers in proportion, could jump 15,000 miles, or about the distance from New York to Cochin China. Aristophanes represents Socrates and his disciples as deeply engaged in calculations of this kind around a table on which they are waxing a flea's legs to see what weight it will carry in proportion to its size, but he does not announce the result of their experiments. We are, therefore, happy in being able to supply, in some degree, so serious an omission.

London.

London extends its intellectual, if not its topographical, identity from Bethnal Green, to Turnam Green, (ten miles) from Kentish. Town of Brixton, (seven miles) whose twenty square miles of ground, has a population of not less than 2,000,000 of souls. Its leviathan body is composed of nearly 10,000 streets, lanes, alleys, squares, places, terraces, &c. It consumes upwards of 4,269,000 pounds of animal food weekly, which is washed down by 1,400,000 barrels of beer annually, exclusive of other liquids. Its rental is at least $35,000,000 a year, and it pays for luxuries it imports at least $60,000,000 a year duty alone. It has 537 churches, 207 dissenting places of worship, upwards of 5,000 public houses, and 16 theatres.

London can beat New York for drinking beer, but New York can beat London two to one in building churches.

A Good Charge.

For simply surveying the ground on which the Asylum on Randall's Island is built, our city has paid the nice little sum of two thousand and fifteen dollars. The value of the work done was about twelve dollars. This is a matter of record in printed black and white. Our tax payers are a most generous set of fellows and those who hold the purse strings are a clever set of gentlemen.

The Cotton Crop in Alabama.

The worms are making great destruction among the Cotton crops in Marengo, Greene, &c. The farmers think they will not make half a crop, and the news is equally discouraging from Mississippi. A planter in Greene, with 10 acres of cotton, does not expect to get over 20 bales. June and July were very wet months.

Did'nt like his Looks.

A sheriff's officer was sent to execute a writ against a Quaker. On arriving at the house he saw the quaker's wife, who, in reply to the inquiry whether her husband was at home, replied in the affirmative, at the same time requesting him to be seated, and her husband would speedily see him. The officer waited patiently for some time, but the Quaker did not make his appearance, and the fair Quakeress coming into the room, he reminded her of her promise, that he should see her husband. "Nay friend, I promised that he would see thee. He has seen thee! He did not like thy looks; therefore he avoided thy path, and hath left the house by another road."

A Heavy Party.

We are told that a social party of six, consisting of a man and wife, two daughters, a sister and a nephew, recently dined together in the town of Orono, Maine, all of whom with one exception, are residents of that place, whose united weight was 1214 pounds,—being an average weight of about 207 pounds each.

Photography.

Mr. Niepce St. Victor has laid before the Academy of Sciences of Paris, photographic designs on paper, which are in every respect superior to anything of the kind ever attempted hitherto. He has employed a process of his own invention, which consists in placing upon the plate of glass to which the chloride of silver is applied, a delicate and perfectly smooth layer of starch or albumen, by means of which, the chloride regains its susceptibility to the influence of light.

Three Faults of Nurses.

1. To lisp in a baby style, when the same words in an endearing tone would please as well. The reverse should be the practice: the voice clearly emphatic, and each syllable distinctly articulated for imitation. 2. To tell of witches, ghosts, and goblins. 3. To direct a child to act a man; whereas it is not often becoming for a little boy to ape the man, but only to conform his demeanor to his age. Every age has its peculiar decorousness.

Yankees Abroad.

It is gratifying to see American talents appreciated by foreigners. A late English paper gives a commendatory notice of a novel and ingenious bridge erected by an American architect. A Yankee engineer has likewise been employed to report a plan, with an estimate of the cost for the supplying of Quebec with water. His report is highly praised by the press of that city.

Lucky Escape.

A Dutchman was relating his marvellous escape from drowning, when thirteen of his companions were lost by the upsetting of a boat, and he alone was saved. "And how did you escape their fate?" asked one of his hearers;" I tid not go in te poat," was the Dutchman's placid answer.

A Great Territory.

Wisconsin makes the 30th State of the Confederacy. It contains some 90,000 square miles of territory—two thirds larger than all New England, and as large as New York, New Jersey and Pennsylvania combined.

A fearful tempest and curious phenomena occurred at Bromberg in Prussia, on the 18th of June, during which masses of electrical fire like broad sheets of flame encircled the steeples, towers and chimnies. In a moment they would blaze with lurid flame and the next be buried up in murky darkness. The thunder was like roaring artillery and the rain like deafening rushing cataracts. Lofty towers and piercing spires were hurled from their foundations and buried in the earth, and the city is now one mass of ruins.

Several heartless landlords in Albany have taken advantage of the general distress to increase their rents

The Albany landlords thus give evidence of being akin to landlords in other cities.

When a Dutch maid servant wishes to go to a dance, and has no swain of her own, she hires a cavalier for the occasion. A beau with an umbrella receives double pay.

An accident occurred at Pesth (Hungary,) by the falling of an immense chain which was being raised in the construction of a suspension bridge. About 200 people were precipitated into the water, but fortunately few lives were lost.

There is a field of corn, 21 miles below Cincinnati, Ohio, which contains six thousand acres.

The Cotton Crop in Baker county, South Carolina, is so much injured by worms, that not more than two thirds of a crop will be secured. Corn and cotton have suffered severely around Yorkville, South Carolina, from drought, especially late corn.

The skeleton of an elk was found a short time ago, in a bog near Hamiltonsbann, a village in Ireland. The antlers, which have ten branches, measure eight feet from tip to tip.

News has been received in England from the expedition sent out in search of Sir John Franklin. We regret to say that it has not yet been successful.

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Bramah's Planing Machinery.

(Concluded from our last.)

" Eighthly, when spherical surfaces are to be produced perfectly true, and equidistant from their centres in all directions, I use a tool or cutter, of a proper shape, according to the nature of the materials to be cut. This tool must be fixed on a cutter frame, fastened to the rest of any common lathe, so as to present its point exactly to a line drawn through the centre of the mandrel of the lathe horizontally, and the said frame on which the the cutter is fixed must have the capacity of drawing out, at pleasure, to any required distance, to accomodate the diameter of the sphere to be cut or turned true. This cutter frame must be likewise made to turn upon a centre or pin, very firm and steadily fixed on the rest above mentioned, so as to enable the cutter to be turned by its frame round a centre exactly perpendicular to the centre of the line before mentioned, by which the altitude of the tool's point is to be regulated; when this is done, and the wood or other material is fixed on the lathe in the usual way, the cutter frame must be drawn nearer or further distant from the centre on which it turns, to accommodate the diameter, just the same as the common rest. If the materials be rough, and require to be reduced to a spherical form by gradation, the work may be repeatedly gone over by the cutter before it reaches the diameter proposed. By this simple apparatus the difficulty of turning perfect spheres is overcome; as it must be obvious to any person of the most ordinary capacity in Mechanics, that while the work is turning in the lathe in a vertical direction, and the tool or cutter is by the hand or otherwise turned at the same time, in a perfectly horizontal direction round a centre, opposite to the actual centre of the sphere, the point of the tool or cutter must, of necessity, generate to turn a perfect sphere, true in all directions, without the smallest attention or assistance from the use of the instrument. I mention, here the application of the cutter frame to a common lathe, conceiving it will by such an explanation, be more familiarily understood without a drawing; but, by this method, spheres of any practical magnitude may be cut with perfect ease and certainty.

" Ninthly, when concave surfaces are to be produced perfectly true, smooth, and equidistant from their respective spherical centres, the work is fixed on a Machine, the same in all respects as the common turning lathe, as in the instance last referred to; I then fix a tool or cutter on a centre, exactly in a line, both perpendicular to and on level with the exact centre of the shaft or mandrel on which the work revolves: and which cutter of tool projects to the required radial distance with its point, so that when the work goes round by the revolution of the lathe, the tool or cutter at the same time revolving round its centre a spherical concave will be generated and produced by the fluxion of its point, as in the instance of the convex sphere.

" Tenthly, I convert solid wood, or other materials, into a thin concave shell, similar to a dish; I cut them alternately out of each other, beginning at the smallest, by means of another tool or cutter, likewise moving on a stationed centre as before, exactly on a level with and perpendicularly true with the centre of the mandrel or shaft of the Machine on which the work is fixed. This tool or cutter is made at its exterior point or cutting end of such a shape as best suits the nature of the work; and its shank or stem is bent to the exact circle the concave is meant to be: it is then fixed on an arm or frame calculated to receive others or different circles according to the work; in fact, the same frame may be used which is above described to hold the tool for cutting spheres, either of the concave or convex kind. The tool must be fixed on this frame or arm, as above mentioned, at such a radial distance from the centre on which the frame or arm turns, so as to form a quadrant, with one leg turning on its centre and the tool forming the periphery with its cutting point projecting to the line of the deficient leg. Before this tool begins its action, a common rest must be applied close to the face of the work, in order to support the tool when it begins its cut, and on which rest the tool will slide till its point proceeds under the control of the centre on which its frame is fixed, until it reaches the horizontal line of the lathe's centre, when the part cut off, or the inner dish, will fall from the shock, and leave the rest for the operation of another tool of a larger circle. Thus the operation may be repeated till the whole lump is converted according to the intention of the owner."

[We have now concluded the specification of Bramah, and given a condensed summary of the main points of Bentham's invention.—These specifications have always been sought after by those who contended against the Woodworth Patent. There is another more valuable patent still, which was enrolled in 1827, by Malcom Muir. It is one year older than Woodworth's and embraces the mode of tonguing and grooving in full. This specification is difficult to get. There are only 20 fac simile copies free for sale in the whole world, and they have lately come into our possession. They are from a certified copy received from the London Patent Office, and three separate drawings are attached to each. The price for each specification in full with the drawings is $5, and to those who are interested in these things, it is worth far more than that sum. The sealed copy cost nearly one hundred dollars.

Man and Machinery.

The following extract from a speech of the Hon Horace Mann, member of Congress from Massachusetts, contains more of the spirit and wisdom of a great statesman, and more of the eloquence of a true orator than can be found in any other speech whatever. We hope that those who have looked upon improvements in machinery as being detrimental to the working classes, and have unwisely promulgated their opinions stirring up opposing and dangerous feelings to progressive invention, will read this carefully, and candidly weigh the matter in all its bearings. We speak thus because we know that many good and honest men, honestly believe that machinery has been injurious to the interests of the working classes. We know that these men are ignorantly wrong and therefore we consider it our duty to throw as much light on their pathway as possible and in a spirit of good will.

Man is weak in his muscles; he is strong only in his faculties. In physical strength, how much superior is an ox or a horse to a man; in fleetness how superior the dromedary or the eagle. It is through mental strength only that man becomes the superior and governor of all animals.

" But it was not the design of Providence," says Mr. Mann, " that the work of the world should be performed by muscular strength.—God has filled the earth and imbued the elements with energies of greater power than all the inhabitants of a thousand planets like ours. Whence come our necessaries and our luxuries? those comforts and appliances that make the difference between a houseless, wandering tribe of Indians in the far West and and a New England village? They do not come wholly or principally from the original, unassisted strength of the human arm, but from the employment, through intelligence and skill, of those great natural forces, with which the bountiful Creator has filled every part of the material universe. Caloric, gravitation, expansibility, compressibility, electricity, chemical affinities and repulsions, spontaneous velocities—these are the mighty agents which the intellect of man harnesses to the car of improvement. The application of water and wind and steam to the propulsion of machinery, and to the transportation of men and merchandise from place to place, has added ten thousand fold to the actual products of human industry. How small the wheel which the stoutest labourer can turn, and how soon will he be weary. Compare this with the wheel driving a thousand spindles or looms, which a stream of water can turn, and never tire. A locomotive will take five hundred men, and bear them on a journey hundreds of miles in a day. Look at these same five hundred men, starting from the same point, and attempting the same distance, with all the pedestrian's or the equestrian's toil and tardiness. The cotton mills of Massachusetts will turn out more cloth in one day than could have been manufactuerd by all the inhabitants of the Eastern continent during the tenth century. One an element which in ancient times was supposed to be exclusively within the control of the gods, and where it was deemed impious for human power to intrude, even there the gigantic forces of nature, which human science and skill have enlisted in their service, confront and overcome the raging of the elements—breasting tempest and tides, escaping reefs and lee shores, and careering triumphant around the globe. The velocity of winds, the weight of waters, and the rage of steam, are powers each one of which is infinitely stronger than all the strength of all the nations and races of mankind, were it all gathered into a single arm. And all these energies are given us on one condition,—the condition of intelligence—that is, of education.

Had God intended that the work of the world should be done by human bones and sinews, He would have given us an arm as solid and strong as the shaft of a steam engine; and enabled us to stand, day and night, and turn the crank of a steamship while sailing to Liverpool or Calcutta. Had God designed the human muscles to do the work of the world, then, instead of the ingredients of gun powder or gun cotton, and the expansive force of heat, he would have given us hands which could take a granite quarry and break its solid acres into suitable and symmetrical blocks, as easily as we now open an orange. Had He intended us for bearing burthens, He would have given us Atlantean shoulders, by which we could carry a vast freight of railcar and steamship, as a porter carries his pack. He would have given us lungs by which we could blow fleets before us; and wings to sweep over ocean wastes. But instead of iron arms, and Atlantean shoulders, and the lungs of Boreas, He has given us a mind, a soul, a capacity, of acquiring knowledge, and thus of appropriating all these energies of nature to our own use. Instead of telescopic and microscopic eye, He has given us power to invent the telescope and the microscope. Instead of ten thousand fingers, He has given us genius inventive of the power loom and the printing press. Without a cultivated intellect, man is among the weakest of all the dynamical forces of nature; with a cultivated intellect, he commands them all."

For the Scientific American.

Tinned Lead Pipes,

To prevent lead pipes from corrosion, whereby injurious impurities might be communicated to liquids conveyed through the pipes Mr. Alderson discovered a mode of tinning the interior of the tubes and secured a patent for the same in 1804. The method consisted in casting a pipe in the usual way. After the core was withdrawn powdered rosin was thrown into the pipe, which was then placed in a vertical position around a core of little less diameter than the die core, and the melted tin was poured in, which as it rose in the pipe melted the rosin and the two metals united. The pipe after this could be drawn out by rollers in the usual way.

Having heard a discussion in reference to the discoverer or inventor of tinning the interior of lead pipes, I was led to examine into the subject and found that Mr. Alderson secured a patent in England in the abovementioned year. G. R.

The Old Chain Mill usefully Applied.

The adapting of certain kinds of machinery to certain circumstances, to subserve economy, bespeaks the highest kind of mechanical ingenuity. Of this fact we were agreeably and fully impressed by reading the following account of the application of the old chain and bucket mill related by the editor of the Cincinnatti Gazette, as having been seen by him while on a tour to Hanover Hills, Ohio.

The Mill is betweenone and two miles from the Ohio river, and applies its power to the grinding of flour for the neighborhood's consumption, and the sawing of boards, scantling, and other timber for building purposes.

It is built across the bed of a small stream, at the foot of a craggy and broken bank rising a considerable height on either hand. Its situation is on the very edge of a projecting rock, and it overhangs a dizzy precipice, from which the water of the rivulet—for the stream is nothing more—after running under the mill tumbles a distance of 106 feet, into a foaming pool below.

The power of the mill is applied to a hollow cylinder, eight feet in diameter, connected with the axis of which are the usual cogwheels, &c. Over this cylinder hangs a chain 212 feet in length, its lower curve resting in the pool that washes the foot of the cliffs. To this chain are attached light wooden buckets, oblong in shape, and sufficiently large to hold about two gallons each. Of these buckets there are about four hundred in number—one half of which have the open side up ready to receive the water, the other half being, of course, in reverse order, having emptied their contents in the pool below and returning bottom upwards to the point where the cylinder is suspended and the water received. The water is carried to the periphery of the cylinder in a wooden trough, or leader, from the lip of which it pours into the buckets, which are so formed and hung that the whole of them on the side next the leader receive the weight at nearly the same instant. The water, consequently, has but fairly begun to flow from the lip of the leader, when the cylinder begins to revolve, and the whole machinery of the mill set in motion.

Nothing could be more simple and cheap than this power. It works to admiration, does not get out of order, and supplies the neighborhood with good breadstuffs and building materials. It could of course be applied to other manufactures.

Origin of Animalcules.

The manner in which infusoria obtain admittance into various fluids has been a subject of debate for some years. The startling idea of spontaneous generation has been broached. Wrisberg thought they were formed from minute particles in the fluid which gradually began to move, and obtained life by degrees. Gruithuisen fancied they proceeded from the extractive matter, acted on by the infusory medium. The most generally received opinion is, that these animals, or their germs, float about as atoms in the atmosphere, and become vitalized or revived on being deposited in a medium favorable to their development. Instances of animals, more highly organized, apparently dying when the fluid has been dried up for a length time, and again resuming the state of active life on being furnished with a drop of water, are familiar to the microscopist. It may be observed in *Rotifer vulgaris*, or the common wheel-animalcule, and in the *Vibrio tritici*, an eel-like animal, causing the ear-cockle or blight in wheat. Both of these animals may be brought back from apparent death to active life after having been kept in a perfectly dry state for several years. What favors the supposition of animalcules being deposited either in the germal state, or from their bodies being dried up and floating in the air, is the fact, that in a series of well-conducted experiments, performed by Schulze some years ago, where water was distilled and well boiled, in order to destroy any animal life it might contain, and vegetables, for the same reason, exposed to the heat of an oven, and the air admitted to the vessel, which was hermetically sealed, through strong sulphuric acid: on the vessel being placed in the sun, after the lapse of some time, not a single animalcule could be detected, though a jar by its side, made of the same materials, but open to the atmosphere, was found to swarm with living beings.

A Great Little Town.

It is a remarkable circumstance, says an exchange, that the *little* town of Westmoreland, Va., which lies on the Potomac, about seventy miles below Washington, and has only about 206 voters, is said to have produced *two* Presidents of the United States; three Judges of the Supreme Court; three Governors and three Revolutionary Generals. It is the birth place of General Washington, Mr. Monroe, of Arthur Lee, the first Minister to France—of Chief Justice Marshall, and Judge Washington—of Henry Lee, the great orator of the first congress, and who, but for the illness of his wife was to have written the Declaration of Independence.

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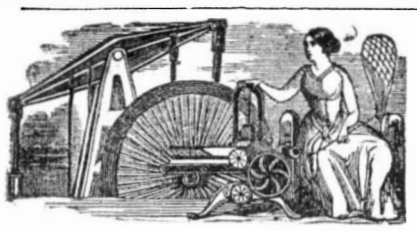


New Inventions.

Machine for Ruling Paper.

A machine for ruling paper on both sides simultaneously, has been invented at Pittsburg, Penn. This is a good invention and we hope that our paper makers will add another for our benefit and also all those engaged in making out specifications. We mean a light marginal line on foolscap. We think this will not be a difficult task. At present we have to pay, at a retail price, sixpence more per quire for a simple margin ruled line. Folding the margin does very well, but our paper makers we believe can do better. Let them try.

New Corn Cracking Machine.

Mr. Warren Weeks, of Mass. has invented an improved machine for cracking corn, which we learn from good authority excels any thing of the kind yet out. One horse can crack 20 bushels per hour.

Improved Railroad Switch.

Mr. P. V. Fisher, of Conn., is the inventor of a new Switch so arranged as to be operated by the engineer from the locomotive. It will be of great use in preventing accidents.

Clock Fan.

Mr. T. C. Schaffer, of Portsmouth, N. H, has just invented a fan which is propelled regularly by a weight operating upon wheels like clock work. Placed by the side of a bed it will run two or three hours without winding up, much to the disturbance of flies and musquitoes which revel on hot summer evenings, and keeps the air in constant motion.—Now who will construct the rocking chair with bellows rockers to blow through musical reeds or pipes, producing both cool breezes and sweet music, as recommended by us last summer.

New Shells of War.

Trials have been made at Hamburg (Hanover,) with what foreign papers call "a new species of shell." Each shell is loaded with 80 musket balls and the interstices filled with melted sulphur, so that when the shell explodes the bullets are discharged on every side as well as the pieces of the shell. The improvement is in the use of the melted sulphur

New Muskets.

A new kind of a musket (from a Yankee invention no doubt,) has been introduced into the Prussian army, which can be fired six or eight times in one minute. It is our humble opinion, however, independent of all the opinions of great men regarding destructive instruments of war being the means of preventing war or making it less horrible, that bombshells made of butter, and cannons made of beef and pork barrels primed and loaded with the best American brands of flour, would do far more to prevent war, at least revolutionary war among the inhabitants of European nations, than either double revolvers, Congreve rockets or Paixhan guns.

Patent Air Seat Saddle.

At the recent exhibition of the Agricultural Society of York, (Eng.) Mr. Taylor of Banbury, Oxfordshire, exhibited beautiful specimens of improved harness, among which was a patent inflated air-saddle, for riding, with a moveable pummel, invented, improved and manufactured by the exhibitor.

About two months ago a young mechanic from Connecticut, was in our office and described the above invention, for which he was going to get up a model and apply for a patent. His case is one which gives force to the adage, "procrastination is the thief of time."

Paints with an Enamel Surface.

It is reported that a Mr. Ticknor, of Brooklyn, N. Y. has discovered a process by which paints of all colors can, when applied to wood, iron, or any other material, be made to have a polish and service equal to the finest porcelain.

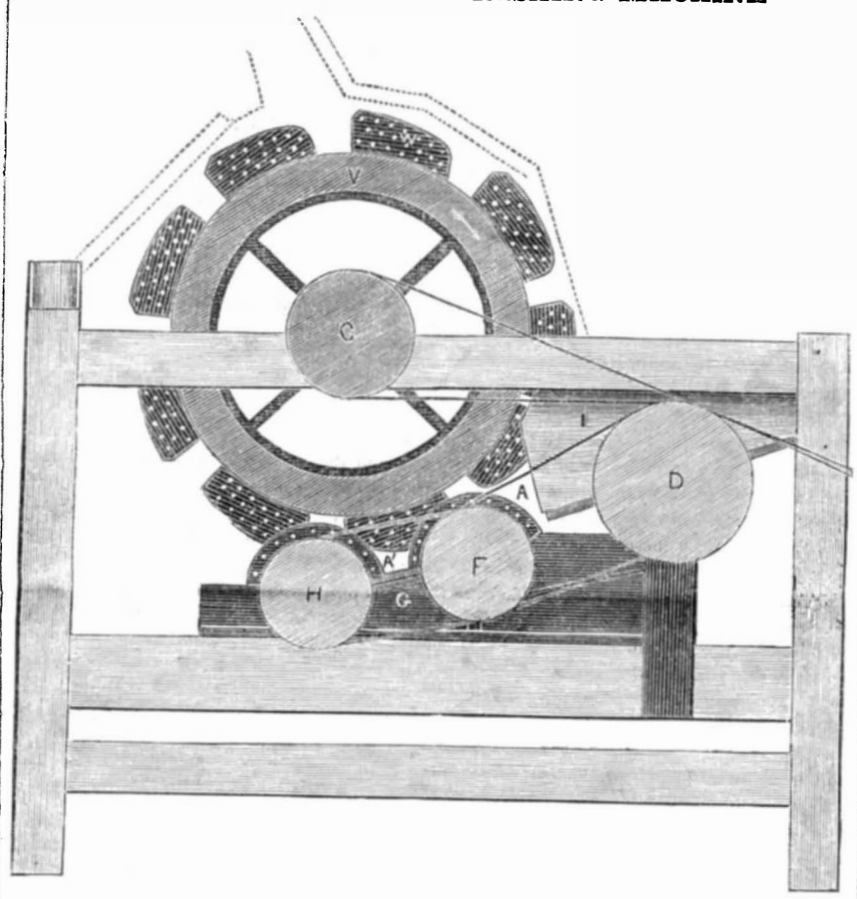
Bain's Writing Telegraph.

Mr. Bain, the electric engineer, arrived in this city by the Cambria and proceeded to Washington to secure a patent for his Telegraph. We have mentioned in a former number, that Mr. Bain's invention was contested by a Caveat of Professor Morse. This will soon be settled. When Mr Bain was here before, we mentioned that all that was now wanting in his printing telegraph to make it perfect, was a mode of operating it to produce a fac simile of the letter at the other end of the wire. He answered that he had been engaged for a long time in perfecting such a method of telegraphing and had it nearly completed. We understand that he has now completed his invention and is about to apply for a patent. By it the profile of a runaway may be sent a thousand miles in a few seconds and one person may hold communication with another by certain understood signs, independent of the operator knowing anything about the nature of the communication. This is certainly a valuable invention.

Balance Water Cock.

Those who desire to see an ingenious and splendid casting should call at the large engine establishment of J. E. Coffee, Esq. corner of West and Beach streets, in this city. It is an immense Water Cock, constructed on a new plan and intended for one of the main pipes of the Croton water. It is the invention of Mr. George W. Coffee, brother of the first named gentleman. The pressure of the water is made to assist in opening and closing it, in such a manner as to render the power to operate it very trifling. A child of 10 years of age could manage it with ease. It is very simple, and far more durable than any of the water gates or cocks in use. In alluding to this invention before we made the mistake of Mr. Coffee's name, giving it as William, instead of George W. Coffee.

ANTHONY'S PATENT THRESHING MACHINE



This engraving is a side view of a Threshing Machine invented by Daniel Anthony, of Sharon, Schoharie Co., N. Y., and secured to him by patent, a description of which is taken from his specification.

The improvements of Mr. Anthony respect the contrivances for separating the grain from the straw. V, is a cylinder furnished with beaters W, &c. of a very peculiar construction. These beaters may be conveniently formed out of boiler plate, and with burrs made on the same by punching up from each side of the plate. The beaters are secured to the cylinder by flanges. As the main cylinder revolves, the beaters pass successively through the intervals between the series of discs of the two bed cylinders A A, which are placed beneath the main cylinder V. The discs are formed of iron and with their hubs, teeth, &c. are cast in one piece.—The edges are sharpened like those of the beaters. The several cylinders are driven as follows. The belt from the driving power is carried to the pulley C, passing in its course over the loose pulley D, with sufficient friction thereon to cause it to revolve. A deep groove is formed on the face of this pulley to receive a card or strap working in a similar groove in the pulley F. A counter belt G, drives H, upon the other shaft of the other cylinder. The several shafts revolve in the direction indicated by the arrows. I, is the feeding table or trough. From the size of the large cylinder it has a greater surface speed than the small cylinders, therefore while the bed cylinders serve to accelerate the passage of the straw through the machine the main cylinder strips the grain from the heads by its velocity. The whole machine is simple and from the manner in which the different parts are constructed, it is not liable to get out of order, and it is therefore very durable, while it is in point of economy of very little expense and therefore must commend itself to the public.

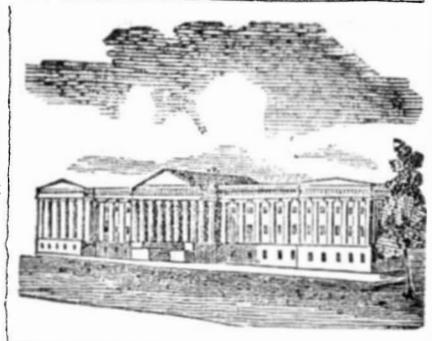
Expense Saved.

It is commonly supposed by those who have discovered some new invention and wish to patent it, that they must make a journey to Washington in person for this purpose. The supposition is entirely erroneous; it is perfectly unnecessary for an inventor to go to Washington, as he cannot by any manner of means hasten his patent or make it more secure. The only result would be a loss of much time and money. Any business relating to patents may be transacted by letter, through the *Scientific American Office*, New York, with the same certainty and dispatch as though the inventor attended in person. Our facilities for taking out patents are unsurpassed, and those who wish to secure their inventions should by all means apply to us. Letters must be post paid.

Wing's Hot Air Furnaces.

In the description of the engraving of this invention, published a few weeks since we stated that measures had been taken to secure a patent. We should have said that the Patent had been already issued. It is an excellent invention and fast coming into use.

An artist named Brewer has executed a panorama of the Mammoth Cave in Kentucky.—It is now exhibiting at Louisville.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For two weeks ending August 22, 1848.

To Lansing Kellogg, of Charlestown, Ohio, for improvement in Guards or Tumblers for Locks, Patented August 15, 1848.

To Solyman Merrick, of Springfield, Mass. for improvement in Screw Wrenches. Patented August 15, 1848.

To James Kyle, of New York City, for a divided bolt Door Lock. Patented August 15, 1848.

To D. Ellis and C. F. Grilley, of New Haven, Conn, for improvement in Spring Fish Hook. Patented August 15, 1848.

To William P. Blake, of New York City, for improved Spring Fish Hook. Patented August 15, 1848.

To M. Waldo Hanchett, of Syracuse, N. Y. for improvement in Surgical or Dental Operating Chairs. Patented August 15, 1848.

To Spencer Hungerford, of Slaterville, N. Y., for improvement in Boiler Furnaces. Patented August 15, 1848.

To L. Pardee and J. Judson, of New Haven, Conn, for improvement in machinery for Jointing Staves. Patented August 10, 1848.

To Oren Stoddard, of Busti, N. Y., for improvement in Bee Hives. Patented August 15, 1848.

To Nathan Baker, of Flowerfield, Michigan, for improvement in Cultivators. Patented August 15, 1848.

To H. P. M. Berkinbine, of Philadelphia, Penn., for improvement of Valves in Water Rams. Patented August 15, 1848.

To L. A. Harper, of Russelville, Ky., for improvement in Straw Cutters. Patented August 15, 1848.

To Henry Allen, of Brattleboro, Vermont, for a Governor for regulating motion. Patented August 22. 1848.

To B. T. Stowell, of Windham's Grove, Illinois, for a Ditching Machine. Patented August 22, 1848.

To James Cole, of Cincinnati, Ohio, for improvement in Boiler and other Furnaces.—Patented August 22, 1848.

To Austin Bronson, of Peekskill, N. Y. for improvement in Cooking Stoves. Patented August 22, 1848.

To A. H. Tait, of Plattsburg, N. Y., for improvement in Coking Wood by the waste heat of iron furnaces. Patented August 22, 1848.

To John E. Tucker, of Boston, Mass., for improvement in Boot Crimps. Patented August 22, 1848

To Henry G. Thompson, of New York City, for improvement in Rotary Steam Engines. Patented August 22, 1848.

To David A. Leighton, of Middlebury, N. Y. for improvement in the Hydraulic Ram.—Patented August 22, 1848.

To Wilson Shreeve, of Elkton, Ky., for a Fly Trap. Patented August 22, 1848.

To T. S. Mackey, of Milton, Penn., for improvement in Cooking Stoves. Patented August 22, 1848.

To Simon P. Case, assignee of H. Parmele, of Danville, Penn. for improvement in Valve and Air Chests of the double cylinder Pump. Patented August 22, 1848.

RE-ISSUES.

To James Montgomery, of Memphis, Tenn. for improvement in Steam Boilers. Patented Dec. 26, 1845. Re-issued August 15, 1848.

To Lewis Werts, of Chambersburg, Penn., for improvement in Water Wheels. Patented June 20, 1848. Re-issued August 15, 1848.

DESIGNS.

To Miles Pratt, of Carver, Mass., for Design for Stoves. Patented August 15, 1848.

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NEW YORK, SEPTEMBER 2, 1848.

Be Intelligent.

True learning does not consist in a profound knowledge of the dead languages, or an acquaintance merely with old authors. The linguist is a learned man in his way, but there are others as well learned as he, who know no other language but their mother tongue.—Knowledge alone constitutes true learning, and there is not a department of science that cannot be explored by any man who can read the English language. We have frequently heard workingmen complain that they were not able to acquire certain kinds of knowledge and become acquainted with certain branches of science. There is no excuse for a man who can read and who has time to study. The great evil which workingmen have to contend against, is a natural antipathy to severe reflection. It has often appeared to us, that the faculty of examining—turning over and over a subject in the mind and viewing it in all its phases, was not to be acquired, but inherent. We have frequently thought this, from observing a general disinclination in men of all classes, to profound investigation. But as severe physical toil without anything to render it joyous, is detested, so is mental toil if there is no nectar to sweeten the cup of the mental laborer.

As it is one of the express objects of the Scientific American to spread abroad useful information in a popular form, we have endeavored to convey sound knowledge to the minds, especially of our mechanics and workingmen, in such a manner as would incite them to love knowledge for its own sake. In this respect, we have been somewhat successful, as many flattering letters testify—this is "like the gale of spring" to our feelings, and we take this opportunity again to urge upon our young subscribers, and old too, the great benefit, yea and the sweet emotions that are consequent upon mastering some useful piece of information, in comparison with time wasted or misspent. How sweet it is to rise in the morning after having become acquainted with something useful that we have read the night before, in comparison with dosing over, or upon the effects of some leaden headed plot in the last new novel. We do not say that those subjects which are named *scientific* are alone worthy of study, far from it.—History, political economy, passing events and religious knowledge are of the utmost consequence. But we would especially urge upon our mechanics to read and study works that are practical and sound, and to talk with one another about their contents, and discuss their merits. What is called a dry subject becomes an interesting one when we enter into its merits with a warmth of feeling and a desire to master it.

There is no man but likes to be esteemed intelligent, and would desire to be well informed. Now, just let any man lay out the subjects, whatever they may be, that he desires to become acquainted with, and then let him read, study and talk with others about them, and for a certainty he will not fail in his reward. He must, however, have perseverance, he must not lay aside his studies for darkness and difficulties, but he must "press onwards to the mark for the prize." Every step that he takes in a forward direction is an advance towards the end of his journey.

Balloon Warfare.

An English æronaut named Coxwell is demonstrating a novel system of ærial warfare at Elberfield, Prussia. On the 17th of July he ascended, in company with a German gentleman, and, when the balloon had attained a considerable altitude he descended from the car to the ærostatic battery, and commenced a sham bombardment of the town beneath him. This performance in mid air at once amazed and amused the spectators, whilst a party of scientific gentlemen decided that the ingenious plans of Mr. Coxwell might prove available for immensely useful purposes in actual warfare.

It may perhaps be but little known to many now living, that Napoleon frightened the inhabitants of Great Britain by threatening to invade that country by means of balloons.—He said that from the great improvements made in balloons, he would soon be able to cross the Channel with his army in divisions, horse, foot and artillery. Thousands in Britain believed it, and many an old woman saw a French invader in a distant sea gull. We have seen an old poem written by a rural bard named Walker, who ridiculed the common fears in a humorous manner, by representing the people flying in all quarters on the appearance of the van of Napoleon's balloon army, which turned out to be a flock of crows.

It may not perhaps be generally known, however, that Dr. Anderson while in France, during the old Revolution and when all French publications were prohibited from entering Germany, used to send messages away in balloons, when the wind was favorable, which were often picked up by the peasants to the great mortification of the authorities and frontier guards.

New Atmospheric Railway.

Many failures have been experienced in the operation of atmospheric railways, even in those which promised much. Whether atmospheric railways will supersede steam propulsion or not, is not the only consideration which should engage attention in respect to any mode of travel. Safety, economy, ease and pleasure, are things to be considered and valued, as much as speed, especially when it has noise and danger as attendants. We therefore will be glad to see a successful atmospheric railway, and from what a late London Mining Journal says, we may yet expect it. The Journal says that it saw a model atmospheric line lately patented by Messrs. Harlow and Young that operated beautifully. The model had a four inch tube 160 feet long, with a gradient at each end of 1 in 100, and a turntable at each extremity, giving the means of starting from each end alternately on the vacuum being obtained, and thus doing away with the necessity and trouble of pushing the carriage every time to the starting point of the tube. The tube is cast with a longitudinal opening, similar to Clegg's; but instead of a flap valve, the action is precisely similar to the slide valve of a steam engine.

The sides of the opening are so cast, that one side presents a horizontal groove, and the other a tabular face, both planed perfectly true; on this tabular face the slide valve rests, when forced out of the coulter, consisting of bars of iron, in a full size working tube, proposed to be four or five feet in length; at each end of these bars a semicircular opening is turned through about half their thickness, forming, when two abut against each other, a circular slot, in which is placed a disc of iron, ground perfectly true with the under surface of the bars, and thus presenting a sort of ruled joint, without any fixed axis, and forming collectively a loose chain which slides over the opening, and renders it perfe ctly airtight. To each of these bars or links is placed a steel spring, in the shape of a carriage spring consisting, however, of only one plate, and merely sufficient power to press the valve into its place, after the passage of the coulter; the whole is covered by a top plate, to keep out grit, wet snow, &c., with the exception of a small space to allow the coulter to pass, which is not much thicker than a saw blade, and which connects the leading carriage with the piston, in the usual manner.

It will be seen by this description, that the entire apparatus is formed of metal, requires the presence of no destructible material, such as leather, &c., and only sufficient lubrication to ease the friction in the sliding motion, and prevent the heating of the coulter in its passage along the edge of the tube and valve.—The construction of this railway tube is certainly void of any complexity, and the model worked with great facility and correctness.—There was little lateral or transverse oscillation in the carriage, which was capable of carrying six persons. It had been inspected by many scientific men and eminent engineers, who expressed their approbation, considering it based on sound mechanical principles, and that the more it is worked the closer the faces of the valve and tube will wear, and, consequently, so much more perfect the vacuum become.

It is easy to perceive by the above description, that it will never supersede the locomotive generally, but we have no doubt but it would be excellent for wooden railroads.

For the Scientific American, Incrustations on Steam Boilers.

For all the many *professed* ways that have been discovered to prevent incrustations especially in tubular boilers, we believe, from the practical evidence of more than one, that mahogany dust and muriatic acid, which were *once* to be the panacea for all incrustations whatever, have utterly failed to confer a single anticipated benefit. There are so many salts, according to the different kinds of water, deposited in the boiler that it is impossible to find out a universal anti-encrustant. In this respect our engineers are more unfortunate than our physicians who find no difficulty in procuring a universal specific for every physical evil which can be removed by some faithful detergent.

An old plan to prevent incrustations in English boilers, was the introduction of potatoes, at about two parts in weight to the 100 of water, the action of which was explained by Payen to be a preventive by the potatoes being converted by the boiling water into a thin starch or gluten which retained the precipitates finely suspended (as gum arabic suspends pigments in water colors,) and allows them to be removed with it, by occasionally emptying the boiler.

Indian meal has been generally used for the same purpose in America, and we approve of its use sparingly, although it tends to priming in soft or middling hard water, yet the priming has some effect in removing incrustations as we have noticed in a few instances. The Indian meal, or sweet potatoes (which have also been used,) are good for newly rivetted boilers in stopping small leaks by gradually depositing and hardening therein. In some waters which deposit stone crust in boilers, the Indian meal is the best thing so far as we are yet acquainted, to remove it. It is at least equal to more expensive substances which have been recommended, and altogether superior to exhausted dye stuffs for which a patent was secured three years ago. High pressure engines seldom need any remedy for incrustation—none if a current can be induced at the bottom of the boiler by mechanical means. Montgomery's boiler was to effect this, and some have spoken highly of its merits, while some have not spoken so favorably.

I have no doubt from what I have seen for myself, that the best and most economical plan for removing and preventing thick incrustations, is to have a draw-off pipe as low as possible and frequently draw off a few pails when the water is at its highest level under a good pressure. And it is also a good plan to introduce, say once in two weeks, a few pounds of Indian meal on a Saturday morning and draw off the water in the boiler in the evening This latter plan I know is excellent and certainly not expensive, nor very troublesome. R. Bartholomew.

New York, August 30, 1848.

Letters for Europe.

We have to caution persons against sending letters to Europe by way of Halifax, expecting thereby to save postage. Strict orders have been given to postmasters to prevent this way of eluding the recent stringent law regarding letters to England. The letters must be post paid in full here, and people coming from England should never carry sealed letters to friends or for friends in this country. Strict search is now made for these things at this and other ports—more strict even than at Liverpool on the other side and every one who has been to Europe knows that to be bad enough, sometimes at least.

New York Revenue.

From the commencement of navigation this year until the 14th ult. the amount of revenue received on the Canals of this State was $1,452,013, being $526,872 less than was received during the same period last year.

The Carrot.

Messrs. Munn & Co.

Gentlemen:—I notice in the last Scientific American your remarks on the Carrot, its useful, wholesome and beneficial uses, but as a profitable investment the half has not been told, and that is an important item to the grower.

The manufacturers with us have tested thoroughly the Woad made from the tops of the Carrot alone in the last year, and pronounce it fully equal if not superior to any imported or American woad, thus opening a channel for the profitable consumption of the whole plant. In our vicinity some considerable experiments have been made in its culture and the result is as follows to the acre:—

800 bushels Bottoms, at 20 cts. : : $160
8000 lbs. Tops, making 3000 lbs. Woad, at 5 cts. : : : : : : : : : : : 150

Making in all, : $310

We use annually 6000 lbs. of woad, and you may judge as well as I can the whole amount used in the United States.

Yours, respectfully,
H. N. Barrow, Practical Dyer.

Broad Brook, Conn., August 15, 1848.

[This is a new field for agriculturists to cultivate, and we are happy to see that the above information comes from a practical dyer—one who is able to judge correctly and express sound opinions upon the subject —Ed.

Worcester Mechanics' Fair.

The first exhibition of the Worcester County Mechanics Association is to be held on the 26th of this month, in Worcester, Mass. The object of the Association, which is a very excellent one, is to incite a spirit of noble emulation among the mechanics around Worcester and the old Commonwealth. The Association was established in 1841. It has a good library, and an annual course of lectures on the Arts and Sciences.

Silver medals and diplomas will be awarded for works of merit, and contributions of all kinds of works of art and mechanism are solicited. The superintendant is P. W. Taft, who will have care over all articles sent to the exhibition. Persons having large articles to send, are requested to let the superintendent know the size of the same twenty days before the opening of the Fair.

We like to see such exhibitions, and are heartily glad to see the Worcester mechanics exhibiting such a spirit. There can be no doubt but they will have an excellent Fair, and much good will result from it.

Another Spoke Machine.

G & A. Odiorne, of No. 5 Congress Square, Boston, makes spoke machines. One for turning 4 at once they say costs $150.

Unprecedented Demand for Old Papers.

At the commencement of the present volume of the Scientific American we had nearly one thousand complete setts of the preceding volume on hand. Since that time we have had 500 copies of those setts bound, and the balance have been ordered by mail and sent in sheets. We are now obliged to inform our patrons that we are unable any longer to furnish *complete* setts in sheets, and that we have but fifty more copies left, which are bound. The price of the remaining fifty copies which are left will be hereafter $3 per copy (neatly bound,) or we can furnish a few more copies in sheets, minus Nos. 1, 10, 16, 17 and 46, at $2 per sett. All the numbers of the third volume can be had yet, at the subscription price.

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Arts, Manufactures and Machinery.

Copying by Pentagraph.—Rose Engine Turning.—Copying Dies.—Making Shoe Lasts.—Screw Cutting.

Copying by the pentagraph is chiefly used for Drawings or Maps: the instrument is simple, and, although usually employed in reducing, is capable of increasing the size of the Copy produced.

A small aperture in the wall, opposite the seat in which the person is placed whose Profile is taken, conceals a camera lucida. If an assistant moves the point, connected by a pentagraph with the hand of the automaton, over the outline of the head, a corresponding profile is traced by the figure.

Rose engine turning an elegant art, depends in a great measure on Copying. The rosettes which are placed on the mandrils oblige the cutting tool to trace out the same pattern on the work, and the distance of the tool from the centre being usually less than the radius of the rosette, causes the copy to be much diminished.

For Copying dies a lathe has been long known in France. A blunt point is carried by a very slow spiral movement successively over every part of the die to be copied, and is pressed by a weight into all the cavities; while a cutting point connected with it by the machine traverses the face of a piece of soft steel, in which it cuts on the same or on a diminished scale, the device on the original die. The degree of excellence of a copy increases in proportion as it is smaller than the original. The die of a dollar piece will furnish by copy a very tolerable die for a sixpence. But the chief use to be expected from this lathe is to prepare all the coarser parts, and leave only the finer and more expressive lines for the skill and genius of the artist.

An instrument not very dissimilar in principle to this was proposed for the purpose of making shoe lasts. A pattern last of a shoe for the right foot was placed in one part of the apparatus; and, when the machine was moved, two pieces of wood, placed in another part which had been previously adjusted by screws, were cut into lasts greater or less than the original, as was desired; and although the pattern was for the right foot one of the lasts was for the left.

When screw cutting is performed in a lathe by means of a screw upon the mandril, it is essentially an Art of Copying, but it is only the number of threads in a given length which is Copied; the form of the teeth, and length as well as the diameter of the screw to be cut, are entirely independant of those from which the Copy is made. There is another method of cutting screws in a lathe by means of one pattern screw, which, being connected by wheels with a mandril, guides the cutting point. In this process, unless the time of revolution of the mandril is the same as that of the screw which guides the cutting point, the number of threads in a given length will be different. If the mandril move quickest, the screw which is produced will be finer than the original; if it move slower, the Copy will be more coarse than the original. The screw thus generated may be finer or coarser—it may be larger or smaller in diameter,—it may have the same number of threads or a greater number than that from which it is Copied; yet all the defects which exists in the original will be accurately transmitted, under the modified circumstances, to every individual generated from it.

Metallurgic Industry of Bohemia.

It appears by a paragraph in a Prussian paper that in Bohemia, within a few years past, metallurgic industry has made great progress.—Although there are not, at present, more than fifty establishments in operation, yet these produced 470,000 quintals of metal in the course of one year—valued at $2,000,000.

This quantity, it is stated, is very little below the entire production of the Provinces of Silesia, the Rhine, and Westphalia, where strenuous endeavors have been made to further this branch of business. The mineral resources of Bohemia are described as most extensive, and according to this statement, have scarcely yet been properly developed.

Eartnquakes and Terrestrial Changes.

BY ALEXANDER HUMBOLT.

Those awful occurrences, called Earthquakes, by which the ground is shaken and convulsed by subterranean force, are not very frequently experienced in Europe, but in hotter climes and particularly in South America, they have done great damage to life and property. In 1797 the town of Riobamba was destroyed, between 30,000 and 40,000 persons were killed, and the bodies of many inhabitants were afterwards found thrown upon a hill several hundred feet high. Walls were twisted round without being thrown down, and rows of trees were deflected. In the great earthquake of Lima and Callao, 1746, there was a sound like subterranean thunder heard after it had occurred, but the ground was not again shaken. Sometimes underground noises are heard without any trembling of the earth as in 1812, a region of 2300 square miles in South America, was alarmed with thundering noises, and in January 1784 subterraneous bellowings were heard in some of the high lands of Mexico for more than a month. No earthquake ever committed such ravages in Europe as that of November, 1752, when Lisbon was laid on the ground, and the plains of Germany, as well as the lakes of Canada felt its influence. Perhaps if we had a knowledge of the things going on in the interior of the earth, we might perceive that there is uninterrupted action against the crust going on: another spasmodic affection of the ground are the volcanoes which at a few points along the surface, throw out occasionally quantities of earthy and metallic substances, which when melted, formed lava. A navigator may change the stars and the vegetable life to which he has been accustomed, but he meets with volcanoes under every clime. Amongst the islands of distant seas, surrounded by palms and strange plants, he can still trace repetitions of Vesuvius, the dome-shaped summit of Auvergne, the craters of the Canaries and the Azores, and the fissures of Iceland. The peak of Cotopaxi, amongst the Andes, is one of the highest volcanic peaks in the world; it is 17,892 feet in height, and the peak of Teneriffe is 11,424 feet high, the middle point of a group. There are emanations of different kinds in many parts of the world, which also show a forcible action going on below. Of carburetted hydrogen, carbonic acid and other gases, sulphur fumes, hot water, &c. there are several escapes in various places.

If we look at the mineral masses of our globe with reference to their mode of production, we discover a four-fold process—namely, eruption, which throws out rocks from the interior in a liquified or softened state; sedimentation, which deposits particles previously suspended in fluids; metamorphosic heat, which alters rocks in their structure and stratification, either by contact with molten matter, or by the penetration of sublime vapours and conglomeration, by which mechanically divided rocks are united by other materials. These processes are going on at the present day. Of rocks brought to our knowledge by eruption, granite, prophyry and basalt, are instances. Limestone and slate are examples of the second process Had the igneous rocks not exerted themselves upon the sedimentary strata, the surface of the globe would have consisted of uniform strata horizontally disposed, a dreary monotony like the steppes of northern Asia. The influence of the heated matter from underneath, was not simply of a dynamical kind by sheltering and upheaving the strata lying above, but a chemical change was occasioned in their constituents and in the nature of their coherence. Through the rents violently made vast masses of metal mineral have been forced up to fill the fissures, and sometimes they have issued to the surface through a narrow opening, and then spread out about, like the cap of a mushroom. The rock in contact with the heated mineral has undergone the change called metamorphic; and thus clay-slate becomes granular and a granite-looking mass, and the earthy structure of limestone also is converted into a granular one. The marbles called Parian and Carrara, in which most of the efforts of sculpture have been enshrined, have been acted upon in this way. The conglomerate rocks have been principally produced by the action of water, which has broken up into fragments the strata whereupon its immense force has been directed, ground them against one another, and then subsided, leaving the process of their second combination to be performed by cements of various kinds. Most of the sedimentary strata contain fossilised animal remains; the igneous rocks by their very nature cannot. The application of botanical and zoological knowledge to the determination of the age of strata, marks out one of the great advances which of late years have been made in geology. The fossiliferous rocks present us with the different objects of bygone periods preserved as it were for our consideration, and it is astonishing what minute and delicate objects have been transmitted to us through myriads of years. The traces of footsteps on wet sand; indigested food, even the ink bag of the sepia has been found so perfect that the same material which the animal employed centuries, nay, thousands of years ago, to preserve itself from its enemies, has served for color to paint its likeness with! Enormous quantities of vegetable matter sometimes entirely petrified, sometimes merely carbonised, have been discovered in many quarters, and they give us a vivid idea of the luxuriance of vegetation that characterised the ancient world.

Carbonic Acid.

BY LIEBIG.

When sulphuric acid is poured upon limestone in an open vessel, carbonic acid escapes with effervescence as a gas, but if the decomposition is effected in a strong, close, and suitable vessel of iron, we obtain the carbonic acid in the state of liquid. In this manner it may be obtained in considerable quantities, even many pounds weight. Carbonic acid is separated from other bodies with which it is combined as a fluid under a pressure of thirty-six atmospheres.

The curious properties of fluid carbonic acid are now generally known. When a small quantity is permitted to escape into the atmosphere, it assumes its gaseous state with extraordinary rapidity, and deprives the remaining fluid of caloric so rapidly that it congeals into a white crystalline mass like snow, but upon examination it proves to be pure frozen carbonic acid. This solid, contrary to expectation, exercises only a feeble pressure upon the surrounding medium. The fluid acid enclosed in a glass tube rushes at once, when opened, into a gaseous state, with an explosion which shatters the tube into fragments; but solid carbonic acid can be handled without producing any other effect than a feeling of intense cold. The particles of the carbonic acid being so closely approximated in the solid, the whole force of cohesive attraction (which in the fluid is weak) becomes exerted, and opposes its tendency to assume its gaseous state; but as it receives heat from surrounding bodies, it passes into gas gradually and without violence.

The transition of solid carbonic acid into gas deprives all round it of caloric so rapidly and to so great an extent, that a degree of cold is produced immeasurably great, the greatest indeed known. Ten, twenty, or more pounds weight of mercury, brought into contact with a mixture of ether and solid carbonic acid, become in a few moments firm and malleable. This however, cannot be accomplished without considerable danger. A melancholy accident occurred at Paris, which will probably prevent for the future the formation of solid carbonic acid in these large quantities, and deprive the next generation of the gratification of witnessing these curious experiments. Just before the commencement of the lecture in the Laboratory of the Polytechnic School, an iron cylinder, two feet and a half long and one foot in diameter, in which carbonic acid had been developed for experiment before the class, burst, and its fragments were scattered about with the most tremendous force; it cut off both the legs of the assistant and killed him on the spot. This vessel, formed of the strongest cast-iron, and shaped like a cannon, had often been employed to exhibit experiments in the presence of the students. We can scarcely think, without shuddering, of the dreadful calamity such an explosion would have occasioned in a hall filled with spectators

Regular Education.

Regular education, we think, is unfavourable to vigour and originality of understanding. Like civilization, it makes society more intelligent and agreeable; but it leaves the distinctions of nature. It strengthens and assists the feeble, but it deprives the strong of his triumph, and casts down the hopes of the aspiring. It accomplishes this, not only by training up the mind in an habitual veneration for authorities, but, by leading us to bestow a disproportionate degree of attention upon studies that are only valuable as keys or instruments for the understanding, they come at last to be regarded as ultimate objects of pursuit; and the means of education are absurdly mistaken for its end. How many powerful understandings have been lost in the Dialectics of Aristotle! And of how much good philosophy are we daily defrauded by the preposterous error of taking a knowledge of prosody for useful learning! The mind of a man who has escaped this training will at least have fair play. Whatever other errors he may have fallen into he will be safe at least from these infatuations; and if he thinks proper, after he grows up, to study Greek, it will probably be for some better purpose than to become critically acquainted with the dialects. His prejudices will be those of a man, not of a schoolboy; and his speculations and conclusions will be independent of the maxims of tutors and the oracles of literary patrons.

The Effect of Poverty on the Mind.

Dr. Channing thus sensibly describes the narrowing and depressing effect of poverty on the intellectual powers:—

The condition of the poor is unfriendly to the action of and unfolding of the intellect, and a sore calamity to a rational being. In most men, indeed, the intellect is narrowed by exclusive cares of the body. In most the consciousnnss of his excellence is crushed by the low use to which it is perpetually doomed.

But still in most, a degree of activity is given to the mind, by the variety and extent of their plans for wealth or substance. The bodily wants of most men carry them in a measure into the future, engage them in enterprises requiring invention, sagacity and skill.

The great idea, which stirs up in other men a world of thought the idea of a better lot, has almost faded from the poor man's mind. He almost ceases to hope for his children as well as himself.

Even paternal love, to many the chief quickener of intellect, stagnates through despair.

Thus poverty starves the intellect. The poor have no society beyond their own class; that is, beyond those that are inclined to their own narrow field of thought.

It is a fact for political economists to urge upon every government, that the inhabitants of every nation are enterprising not according to their poverty, but their independence. The most degraded people have the least care for the future, while the ever present is always misery.

The Pitcher Plant.

This plant abounds in the stony and sterile parts of the island of Java from which, were it not for this vegetable wonder, small birds and quadrupeds would be forced to migrate in quest of water. At the foot stalk of each is a bag shaped exactly like a pitcher furnished with a lid and having a kind of hinge that passes over the handle of the pitcher, and connects it with the leaf. This hinge is a strong fibre which contracts in showery weather and when the dew falls Numerous little goblets filled with sweet fresh water are thus held forth, and afford a delicious draught to the tiny animals that climb their branches, and to a variety of winged visitants. But no sooner has the cloud passed by, and the warm sun shone forth, than the heated fibre begins to expand, and closes the goblet so firmly as to prevent evaporation, precluding a further supply till called for by the wants of another day.

At Georgetown, S C. a school of strange fish appeared for two days lately, one of which measured when taken 18 feet wide, 13 feet in length and had a mouth 4½ feet wide.

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TO CORRESPONDENTS.

"A. N. G. of Ohio."—Your plan of a Brake is very good so far as stopping the cars is concerned, but the many parts attached to it will prevent its practical use. The common brake, you know, is merely a chain and spindle by means of which a rubber is drawn against the wheel. This brake is not so effectual as we ought to have, yet it is simple and therefore generally in use. We shall be happy to see the other invention of which you speak.

"A. H. of Mass."—You are perfectly safe in using the lead pipe in gravelly or clayey soil, but not in a marshy. The half inch pipe is strong enough under a fall of 25 feet and the double that height, if the metal is good and well drawn. It should be buried so as to be free from frost, that is all, but the supply can only be regulated by the quantity at the fountain head.

"S. V. K of N. Y."—You will find a full description of Avery's Atmospheric Railway in No. 27 of this vol. Scientific American.

"J. W. of Penn."—Upon a second consideration you will be convinced that you *have* tasked our patience too much without some remuneration.

"D. V. of Ohio."—We know of no one just now, who would accede to your proposal; if we find the right person we will address you.

"S W. of Mass."—We would not advise you to be at the expence to procure a patent for the invention described. It would not be possible to get one as it is not new. Stearic acid is obtained by pressure, but there is a new mode of obtaining it, which is patented; this we have spoken of before. The lead pencils are made both ways. The strictest secrecy is maintained by the Company upon all unpatented inventions,—honor is the rule of our business.

"J. McC. of Geo."—At present we cannot tell you the price of a knitting machine nor where to buy one. They are made in Baltimore, Md. We will notice your request again if we get the required information.

"J. Mc. M. of Md."—There is a good elementary work on chemical analysis, by Frensenius. You will find it at the Book stores, also Ure's Dictionary as an auxillary, and the late chemical work by Professor Johnson, published by Cary and Hart, Philadelphia. But if you desire a work for arrangement merely, classifying the different specimens,—three days along with a good Geologist in a Cabinet is worth 10 volumes.

"C. K. of N. J."—There are two kinds of machines in use, apparently the same in principle as the one you propose. The one, is the hydraulic ram, and the other, is D. Winder's, described in number 1, present Volume Scientific American

"A. C. D. of Ga."—Yes, this volume will be furnished with an Index

Two Horse Steam Engine.

Having recently had several communications relative to small steam engines, we would state that we have just now received from the manufactory a new and about as perfect an engine and boiler of two horse power as we ever saw. They are of the latest pattern and complete in every respect. The engine is attached to the boiler for the sake of compactness, the whole occupying a space of only 3 feet square on the ground and 6 feet high. Another advantage to the boiler, is that they can be moved from one location to another without altering the connections. This engine can be sent with safety to any part of the country in perfect running order. It is bran new and operates beautifully. We will dispose of it to the first customer for $250.

Railroad and Steamboat Guide.

We have received from J. Disturnell, 102 and 233 Broadway, a copy of his new Railroad and Steamboat Guide. It contains a brief description of all the principal places, tables of distances, travelling routes, &c. in the Middle, Eastern and Northern States, being valuable to every one.

Hudson River Guide.

We have also received from the same publisher the Hudson River Guide, which consists of an accurate map of the river with descriptions and distances of all the various places upon its banks.

To our Subscribers.

The present volume of the Scientific American expires after two more numbers, and those who wish to have their volumes bound would do well to send their numbers to this office to be executed. Price of binding in a neat and substantial cover 75 cents, extra $1.

Also,

Many of our subscribers will bear in mind that their subscriptions expire with number 52, and we hope if they wish the paper continued that they will remit the next payment immediately, that the publishers may better judge how large an edition of No. 1, vol. 4 to issue.

Sugar in the Sandwich Islands.

Attempts are being made to establish large sugar plantations in the Sandwich Islands, and several sugar mills have been ordered from this city.

Diabolical Act.

On Thursday of last week a cart load of a chemical substance resembling sand, was thrown on Wallace st., Philadelphia, which has been the means of burning a number of persons who had walked on it, and in one instance causing death from its effects.

Advertisements.

☞ This paper circulates in every State in the Union, and is seen principally by mechanics and manufacturers. Hence it may be considered the best medium of advertising, for those who import or manufacture machinery, mechanics tools, or such wares and materials as are generally used by those classes. The few advertisements in this paper are regarded with much more attention than those in closely printed dailies.

Advertisements are inserted in this paper at the following rates:

One square, of eight lines one insertion,	$ 0 50
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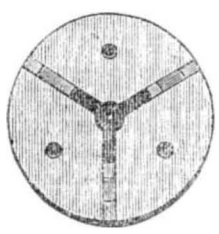
Persons residing in the city or Brooklyn, can have the paper left at their residences regularly, by sending their address to the office, 128 Fulton st., 2d floor.



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FOR
TURNING LATHES
For sale by the Manufacturer's Agents,
QUINCY & DEALA-PIERRE, 81 John street, New York. s2 3m*

A Two Horse Engine and Boiler For Sale.

JUST received from the manufactory and for sale, price $250, a new and splendid two horse engine and boiler, made in the very best manner, complete in every respect. They are of the latest pattern, the engine attached to the boiler in order to occupy but little space. The necessary steam pipes are included and as the connections, which are stationary, are already made, it can be sent in running order, to any part of the United States. No mason work or soldering is required, and the purchaser, to put it in operation would have only to make a fire in the furnace. MUNN & CO.
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Judson's Stave Dressing Machine.

THIS Machine, on which Letters Patent were granted May 1st, 1847, has been in successful operation for the past year, and hundreds of thousands of staves have been dressed by it. It is warranted to dress the same quantity of staves with as little power as any that can be started, also leave the full thickness on thin edges and thin ends, and conform as near to the crooks and twists of the timber as can be desired. The jointing of the machine which accompanies it, has been subjected to the severest test, and pronounced superior to that performed by hand. Application for a patent on the Jointer has been made.

Large quantities of Hogsheads and Shooks made with staves dressed and jointed with their machines have been sold and used to the entire satisfaction of the purchasers.

For rights and machines address the proprietors at their Manufactory, Artizan street, New Haven, Connecticut, where machines in full operation may be seen. JUDSON & PARDEE.
New Haven, July 17, 1748. jy29 3m*

Fraud.

Washington Shielded Spring Diaper Pins.

Caution to the public and dealers generally.

WHEREAS a certain individual has undertaken to manufacture my Patent Spring Diaper Pins—this is to caution all persons not to purchase them of him or any person he may employ, as any dealer vending the same will be liable to a fine of one hundred dollars for each offence It is understood that the said individual intends to persuade persons to purchase by pretending to become responsible for all damages. Dealers are cautioned against all such pretences. The genuine Pins will always be stamped with the words "Rabbeth's Patent," on the back of each. J. RABBETH,
au26 2t* Glastenbury, Connecticut.

A Twelve Horse Steam Engine and Locomotive Boiler for one half their cost.

BOTH the above are of the very best kind, nearly new and in perfect running order. Their cost when new was $1600. The engine is a horizontal one, of simple construction, and is a splendid piece of work. The boiler is of the heaviest wrought iron made in the very best manner, and with proper care will be warranted to last for 10 years. The cost of fuel is 40 cents per day. The above are now offered for sale to close a concern for $800, cash. It is an opportunity seldom met with. They may be sent with perfect safety to any part of the United States, and if desired, an engineer will accompany and put them in operation. Apply to
MUNN & CO.,
Scientific American Office, New York.
Letters must be post paid. au19 tf

To Cotton Manufacturers.

THE Subscriber will furnish Cotton Manufacturers with his improved Cotton Willow. The fact of its being introduced into most of the best mills in New England is the best proof of its excellence. It is extremely simple in its construction and will do more and better work with a less expenditure of power than any other Willow; it prepares the cotton so much better than any other that there is much less power and repairs needed on the succeeding machinery. It is as safe from fire as a Card, and its form and action are such as to draw all the flyings and dirt from the journals; it will convey the cotton to any desirable distance short of 250 feet. It can be placed in the basement of a mill or other place nearly worthless for other manufacturing purposes, and will blow the cotton into the rooms above. All necessary information given for placing and operating the machine in any peculiar or difficult situation. EDMUND BACON,
Superintendent Quinebaug Manufacturing Co.
j24 tf Norwich, Conn.

Patent Agency.

THE undersigned having established permanent agencies in England, Ireland, Scotland, France and Belgium (with the leading manufacturers and inventors of which countries he is personally acquainted), is enabled to transact all business entrusted to his care with perfect safety and dispatch; and such is the integrity, energy and legal ability of our agents, that the patentee is, in ninety-nine cases out of a hundred, sure to reap a rich harvest from any invention which passes through our hands.

Since the first of March last we have sold three patents in Great Britain for $17,580, and five in France for 38,000 francs.

For integrity, the undersigned refers to:—Horace Greeley, Esq. Tribune Buildings, New York.
CLINTON G. GILROY,

All letters must be post paid, and addressed to Clinton G. Gilroy, 71 Nassau st. New York. jy1 3m*

TAFT'S PREMIUM LETTER COPYING PRESS.

THE Subscriber continues to manufacture his Premium Letter Presses, at Worcester Mass., and respectfully informs his friends and the trade generally, that he keeps constantly on hand a large assortment, which he offers for sale at reduced prices. Orders by mail will be promptly attended to
GEO. C. TAFT,
Worcester, Mass., April 11, 1848. au5 tf

T. J. WELLS,

MILLWRIGHT AND MACHINIST,
Foot of 29th Street, N. R. New York.

Manufacturer of all kinds of Saw Mill Machinery, such as Straight Saws with Carriage Veneer, Scroll, Slitting, Circular, &c.; also, Shafting, Gearing and other machinery.

My Patent Improved Slitting Saw Mill, for slitting Boards, Plank, &c., may be seen in operation at the above—where all Planing, Sawing and Turning is done in the best manner and on the most reasonable terms. au12 4t

PREMIUM SLIDE LATHE.

THE subscriber is constantly building his improved Lathes of all sizes, from 7 to 30 feet long, and can execute orders at short notice.
JAMES T. PERKINS,
Hudson Machine Shop and Iron Works,
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THOMAS PROSSER, Patentee,
d26 28 Platt street, New York

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Augusta, Maine, Oct. 1, 1847. J. G. JOHNSON.

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The wheels are manufactured and for sale by the FULTON IRON FOUNDRY CO., South Boston, Mass.,—where the wheels can be seen and any information concerning them had.

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It will **Dress** and **Joint** Staves of all shapes, kinds and dimensions, and of promiscuous widths, as they come from a mixed pile, at the rate of from 6 to 8 staves per minute, finishing them, before they leave the machine, ready for the truss hoop. They are both dressed and jointed very smoothly and handsomely, bringing each stave of equal width at the two ends without waste of stock and perfectly to correspond with every twist or crook, and with as little power in proportion to the work done, as any other machine.

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Patented April 10th, 1848.

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Smelting Copper Ore by Electricity.

In a previous number of the Scientific American we described the method discovered by James Napier, of London, for the separation of metallic copper from copper ore, simply by first fluxing the ore and then employing the galvanic battery connected with blacklead crucibles while in the furnace. The plan of Mr. Napier was no doubt interesting to many of our readers, and the following plan of two French gentlemen, M. de Chaud and G. de Claubry, will be found to be no less so.

Their process consists of two operations, viz: roasting the ore, and the precipitation of the copper. The roasting is perfected in a reverberatory furnace, either by the conversion of the sulphuret into sulphate by the action of the air, or in the transformation of the oxide of copper into sulphate, by calcinating it with the sulphate of iron, at a dull red heat in a current of air, the iron being left in a state of peroxide. Washing then extracts the sulphate of copper, so that the most impure minerals will afford copper equally pure with the carbonate of oxides. In the precipitation by galvanism, batteries would be far too costly; and they have obtained the same results without the use of external batteries. The principle is as follows: If two solutions are placed one over the other, one of sulphate of copper very dense, and the other sulphate of iron less dense, and in the first is placed a plate of metal, and in the second a fragment of cast-iron, and then unite these two metals by a conductor, the precipitation of copper commences at once, and is completed in a long or short period, according to the temperature, the concentration of the liquids, and the extent of metalic surfaces; the state of the copper becomes greatly changed as the liquor becomes weaker. To obviate this, they take advantage of the following phemomena:—After some minutes' action, there exists four strata in the liquids; at the bottom is a dense solution of the same salt; next, a sulphate of iron; and on the surface, a less dense solution of the same. If, therefore, we arrange, at the level of each of these liquids, suitable apertures for the addition or removal of these liquids, they can be kept at a uniform state of density and thus the copper is always pure in the same physical condition.

For convenience, the liquids are now arranged in vertical, instead of horizontal layers; they are now to be separated by a diaphragm, very permeable to electricity, but not to liquids; paste-board answers very well for this, and lasts for months. The apparatus is then arranged as follows: A chest of wood, lined with lead or some suitable mastic contains the solution of sulphate of iron; into this chest a number of cases are plunged, made of a frame having its ends and bottoms formed of iron plates coated with lead, the sides being of paste-board. The strong solution of sulphate of copper enters through a pipe near the bottom, and escapes in its weak state through an opening at the top; in each case is placed a sheet of leaded iron, and between each are plates of cast-iron; separate rods connect each plate with the common conductor, which is supported over the apparatus, and the copper is precipitated on both sides of the sheets of metal, the paste-board preventing the immediate contact of the two liquids; the sulphate of iron thus floats above the sulphate of copper, and the apparatus fulfils all that is required.

The London Mining Journal says that at a temperature of 68 degrees Farenheit, 10.73 feet of surface will receive 15,444 grains of copper in 24 hours, perfectly pure, and immediately fit for hammering or passing through the rolling mill. This manufacture of copper presents no difficulties, requires no refining, and gives no scoria. The patentees consider that as a metallurgical result, 50 per cent. of the copper is obtained in sheets; 25 per cent. in fragments, which requires fusion; and 25 per cent of powder requiring subsequent refining. The application of galvanism to smelting appears to be reduced to the simplest form, and electrotypes on the largest scale can be obtained.

This process has been patented, and if the results are so full of profit, we trust that our smelters will not neglect it, but the benefits, like too many other things, may be much exaggerated by the inventors.

For the Scientific American.

Curious Clocks.

Almost every person has heard of the curious clocks of Strasburg, and Lyons in France, and we were of the opinion that they were the most wonderful in the world, yet we have discovered that there are two in China made about thirty years ago for the Emperor by the East India Company, which are perhaps the most wonderful.

The two clocks are in the form of chariots, in each of which a lady is placed in a fine attitude, leaning her right hand on a part of the chariot, under which appears a clock of curious workmansip, little larger than a shilling, that strikes, and repeats, and goes, for eight days. On the lady's finger sits a bird finely modelled, and set with diamonds and rubies, with its wings expanded in a flying posture, and which actually flutters for a considerable time, on touching a diamond button below it; the body of the bird, in which are contained part of the wheels that animate it, is less than the 16th part of an inch. The lady holds in her left hand a golden tube, little thicker than a large pin, on the top of which is a small round box, to which is fixed a circular ornament not larger than a sixpence, set with diamonds, which goes round in three hours in a constant regular motion.

Over the lady's head, is a double umbrella, supported by a small fluted pillar not thicker than a quill; under the cover of which a bell is fixed at a considerable distance from the clock, with which it seems to have no connection, but from which a communication is secretly conveyed to a hammer that regularly strikes the hour, and repeats the same at pleasure, by touching a diamond button fixed to the clock below. At the feet of the lady is a golden dog; before which, from the point of the chariot, are two birds fixed on spiral springs, having their wings and feathers set with stones of various colours, and they appear as if flying away with the chariot, which, from another secret motion, is contrived to run in any direction, either straight or circular, while a boy, that lays hold of the chariot behind, appears to push it forward. Above the umbrella are flowers and ornaments of precious stones; and it terminates with a flying dragon set in the same manner. The whole is of gold, most curiously executed and embellished with rubies and pearls.

Electric Sparks.

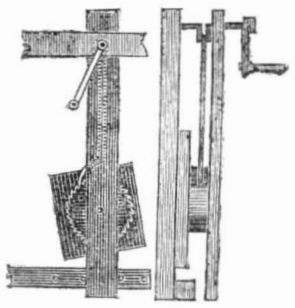
When the prime conductor of an electric machine is situated in its proper place and electrified by whirling the cylinder, if a metalic wire, with a ball at its extremity, or the knuckle or the finger be presented to the prime conductor, a spark will be more vivid, and will be attended with a greater or less explosion, according as the ball is large. The strongest and most vivid sparks are drawn from that end or side of the prime conductor which is the farthest from the cylinder. The sparks have the same appearance whether they be taken from the positive or negative conductor; they sometimes appear like a long line of fire reaching from the prime conductor to the opposite body, and often (particularly when the spark is long, and different conducting substances in the line of its direction) it will have the appearance of being bent to sharp angles in different places, exactly resembling a flash of lightning.

Whiskey a Cure for Poison.

An Australian journal says, that an Irishman succeeded in curing his wife, whose leg had been bitten by a venomous serpent, through the application of a whiskey bottle, mouth downward, to the wound. The whiskey gradually became darker, and the discoloration round the bite diminished, until at last, the whole of the poison appeared to have been absorbed by the spirit.

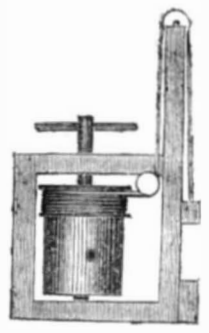
MECHANICAL MOVEMENTS.

Circular and Vibratory Motion.



This engraving represents a front and side view of a machine which has been used in polishing mirrors, in which process it is desirable to vary the direction of the rubbing as much as possible. The handle seen on the right turns a crank to which is attached the perpendicular bar carrying a ratchet wheel; which is guided by the pins seen in the horizontal bar below. The glass to be polished is attached to the ratchet wheel, which is revolved along with it at every revolution of the crank, and is guided by a ratchet on the crank seen in section fixed on the same axis as the crank which vibrates the perpendicular bar.

Reciprocating and Circular Motion.



This engraving represents a modification of a machine for driving piles. The part which receives the rope being permitted to slide loose on the perpendicular shaft, on which it revolves at the upper part, but being carried along with the shaft on the lower part; the lower drum is fast to the shaft and is constructed with a spiral surface, calculated to raise the upper part of the drum as it fills with the rope which brings it on the loose part of the shaft and allows the weight to fall

Facts in Building.

One fact is, that a square form secures more room with a given cost for outside walls, than any other rectangular figure. Great length and little width may afford convenient rooms, but at an increased expence.

Another fact is, that ventilation is an essential in a human dwelling. No other consideration should exclude this. The halls, windows, and doors should be so situated with regard to each other, that a full draught of air can be secured, at any time, in the summer season, by day and night through the whole house. The stories should also be sufficiently high to afford a sufficiency of air in all the rooms. Nine feet is a good heig ht for lower rooms, and eight for upper. Bed rooms should also be larger than they commonly are. Great injury to health is the result of sleeping in small close apartments.

The third fact is, that a steep roof will not only shed rain and snow far better than a flat one, but will last immensely longer.

The fourth fact is, that a chimney in or near the centre of the building will aid to warm the whole house, while if built at one end or side, the heat will be thrown out and lost.

The fifth fact is, that a door opening from the outside into any principal room, without the intervention of a hall or passage, costs much more than it saves, in the free ingress of air into it.

The sixth fact is, that the use of paint is the best economy, in the preservation it affords to all wood work.

The seventh fact is, that if the front door is made at one side instead of the middle of the front, a partition will be saved and for small houses this should not be forgotten, but for large houses have the main door and lobby in the middle of the house.

The eighth fact is, that the choice of a situation is of as great if not greater importance than the mode or style of building. Choose a dry elevated situation and dont forget plenty of good water.

The best way to use Gun Cotton.

Who would have imagined, when gun cotton was produced by Mr. Schonbein and the world was threatened with destruction by being blown up with this terrible explosive material, that within a few months it should be discovered to be an excellent styptic for dressing cuts and wounds? But so it is.—Dissolved in ether and applied to the severest cut, it forms an adhesive covering of singular closeness and adhesiveness, protects the wound and excludes atmospheric air, or any irritating matter, so that process of healing, is carried on speedily and effectually; and when all is well, the "protectionist," having done its duty, is removed. So also has Dr. Simpson of Edinburgh, we are informed, similarily applied to chloroform and gutta-percha! This mixture, in a liquid condition, at about the consistence of fine honey, is kept in a phial or bottle, and when an accident of the kind to which we have referred occurs, it is simply poured upon the wound; the choloform instantly evaporates, and the gutta percha remains a perfectly flexible second skin, over the injured part, preserving it for weeks if necessary, without the need of dressing, bandages, or any other appliance, till there is no more occasion for this admirable agent. When we call to mind how much human pain that will thus be alleviated, how many cures effected where hitherto there has been danger and uncertainty, and how a number of surgical operations will be simplified, it may not be considered too much to rank such inventions among the most valuable that could be discovered and applied for the benefit of mankind.

Blackberries vs. Mutton.

Col. Schouler, the editor of the Boston Atlas, who happens to be amusing himself at Nantucket catching sharks, in one of his letters from there, says that the people of that island are divided into the sheep and anti sheep parties; the latter being in favor of killing off all the sheep because they destroy the blackberry bushes, while the former are for saving their mutton in preference to the blackberries. The Colonel says that these Nantucketers consume about ten thousand dollars worth of blackberries annually.

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